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ABSTRACT

This paper discusses the resources, current operations, and various bibliographic formats and standards used in the University of the Philippines at Los Banos (UPLB) libraries, where the information systems have been independently developed and tailored to their particular needs. Such a situation has resulted in data incompatibility leading to limited access and use of available information. Data elements of three existing databases, namely Acquisition, Cataloging, and the holdings of the Institute of Agrarian Studies (IASt) Library, were compared to determine their incompatibilities. Using a common software, CDS/ISIS, an attempt was made to propose a unified format that these libraries could use to exchange and share information within the complex. Although this is limited to the UPLB complex at the moment, information centers of affiliated institutions are being considered for inclusion in the future. Lists of data elements in existing databases, proposed unified tags and field characteristics of common and uncommon data elements, and a proposed unified format for all data elements are presented in four tables. (MAB)

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UNIFIED FORMAT FOR INFORMATION SHARING
AMONG LIBRARIES AT THE LOS BANOS COMPLEX

V. G. ANDAY

INTERNATIONAL SYMPOSIUM ON INFORMATION TECHNOLOGY : Standards For Bibliographic control

September 4 - 8, 1989
at Bangkok Palace Hotel, Bangkok

U.S. DEPARTMENT OF EDUCATION
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ABSTRACT

The Los Banos Complex or the University of the Philippines at Los Banos (UPLB) complex, situated some 67 kilometers south of Manila sprawls on more than 1,000 hectares of campus land, experimental fields, demonstration farms, and research areas. The UPLB complex has seven colleges and 25 research and training institutions and only 9 of these colleges/institutes have libraries in addition to the University Library. Most of these libraries use information systems which are independently developed and tailored to their particular needs. This has resulted in data incompatibility leading to limited access and use of available information. This paper discusses the resources and current operations of these libraries and the various formats and standards used in their bibliographic records. Data elements of three existing databases, namely: Acquisition, Cataloging and IASt were compared to determine their incompatibilities. Using a common software, CDS/ISIS, an attempt was made to propose a unified format that these libraries can use to exchange and share information within the complex. Although this is limited to UPLB complex at the moment, libraries/information centers of affiliate institutions are being considered for inclusion in the future.

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The Los Banos Complex

The Los Banos complex or the University of the Philippines at Los Banos complex, situated some 67 kilometers south of Manila sprawls on more than 1,000 hectares of campus land, experimental fields, demonstration farms, and research areas. In 1965, two colleges, four institutes and a national training center make up the Los Banos complex which aimed to contribute to the building of an efficient, dynamic agriculture in the Philippines and other Southeast Asian countries so their expanding millions can live a life of abundance, freedom and dignity.

At present, UPLB has seven colleges and 25 research and training institutes (Appendix 1). It has likewise affiliate institutions within and off the campus. Among these are the International Rice Research Institute (IRRI), the Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA), the Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD), the Forest Products Research and Development Institute (FPRDI), the Forest Research Institute (FORI), and the Education and Training Center of the Department of Local Government and Community Development of the Philippine Government.

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Libraries at Los Banos Complex

The libraries at Los Banos complex can be grouped into libraries of UPLB and libraries/information centers of affiliate institutions.

Library cooperation on a limited extent is being practiced among these libraries due to inadequacy of library resources coupled with the increasing research activities. Researchers from these institutions are allowed to avail of library resources within library premises, subject to each library's rules and regulations.

This paper limits itself to libraries of the UPLB. These libraries are under the umbrella of one organization, so policies and regulations are not much of a problem. However, these libraries use information systems which are independently developed and tailored to their particular needs. This has resulted in data incompatibility leading to limited access and use of available information. Their library resources, current operations and the various formats used in their bibliographic records were surveyed. An attempt was made to propose a unified format that these libraries can use for better exchange and sharing of information within the complex. Once this is implemented, libraries of affiliate institutions within the Los Banos complex should be included in resource sharing, since these libraries are located within a limited geographical area whose users have similar level of interest and whose resources are complementary and supplementary. However, effective resource sharing becomes a reality if there is commitment, funding and great deal of goodwill. The

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acceptance of rationality behind resource sharing and demonstration of willingness to share are key aspects to successful sharing schemes.

Library and Information Exchanges Within the Complex

Of the 7 colleges and 25 institutes at UPLB, only 9 have libraries, excluding the University Library. Of these, 3 are college libraries and 6 are institute/school/center libraries. Others have reading rooms while the rest depend on the University Library. The UPLB Library System includes the University Library or Main Library and Unit libraries, namely: College of Forestry (CF) Library, College of Economics and Management/Agricultural Credit and Cooperative Institute (CEM/ACCI) Library, Institute of Agrarian Studies (IASt) Library, College of Veterinary Medicine/Institute of Animal Science/Dairy Training and Research Institute (CVM/IAS/DTRI) Library, and Rural High School Library. These libraries are under the supervision of the University Librarian. Four other UPLB libraries, namely: the National Crop Protection Center (NCPC) Library, Institute of Plant Breeding (IPB) Library, National Institute of Biotechnology and Applied Microbiology (BIOTECH) Library/Reading room, and Postharvest Horticulture Training and Research Center (PHTRC) Library are directly under the supervision of the heads of the centers/institutes.

The University Library has the most extensive collection of agricultural materials in the country and is particularly strong in the plant and animal sciences. It also serves as the National Centers for the Information System for the Agricultural Sciences and Technology (AGRIS)

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and the ASEAN Food Post-Production Information Exchange Program (APEX). At the same time, it has CD-ROM AGRICOLA now ready for use. The current AGRICOLA disk covers 1984 to present and is updated quarterly.

All UPLB libraries use the Library of Congress Classification in the organization of their library materials, except for IPB Library which is to be organized yet. Seven libraries are doing indexing services. The outputs are either in book form or slips filed in boxes/catalog trays. These manually produced index to periodicals have been designed to meet the immediate needs of their users. These local periodicals being indexed are not included in commercially published indexes. The common data elements used in these indexes are : Author, Title of the article, Title of the Source, Volume/Issue Number, Pages, Date of Publication, and Subject Heading. Fifty percent of these libraries have Current Awareness Service in the form of Acquisitions List, SDI, etc.

Software and Hardware Available

Of the 10 libraries covered only the University Library, IASt Library and NCPC Library have microcomputers. Three software packages which run on microcomputers are available at the University Library and IASt Library, namely: CDS/ISIS (Computerized Documentation System/Integrated Set of Information Systems), Wordstar and DB III. The NCPC Library has Wordstar and DB III and is currently applying for the acquisition of CDS/ISIS.

At present, the University Library has embarked on computerising the library processes. Using the CDS/ISIS

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software developed by UNESCO. It started with Acquisition and Cataloging in 1988. It is still in the experimental stage, starting with 1988 book orders, and inspite of some minor problems, the library's needs are being met so far. Circulation and Serials Control are also being considered for computerization. Lately, the IASt Library started to computerize its collection using CDS/ISIS. Several staff of NCPC Library are now being trained on CDS/ISIS at the Agricultural Information Bank for Asia, SEARCA, while the BIOTECH Library/Reading room intends to install a microcomputer using also the above software.

Since CDS/ISIS software is already available to some of these libraries, a common format should be adopted by these libraries to facilitate better exchange of information. At the rate these libraries are going, and with manageable data yet to work on, it is but timely that a unified bibliographic format be designed for compatibility purposes, easy access and maximum sharing of resources. With integrated effort, duplication of work will also be minimized.

CDS/ISIS is a generalized Information Storage and Retrieval System designed specifically for the computerized management of structured non-numerical data bases. One major advantage of this system is that the same set of computer programs is able to manipulate an unlimited number of databases each of which may consist of completely different data elements. Some features of CDS/ISIS require some knowledge of and experience with computerized information systems but once an application has been designed, the system may be used by person having little or no prior

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computer experience.

Although CDS/ISIS deals with text and words, it does more than text processing, even though it offers many of the features normally found in word-processing packages. This is because the text that CDS/ISIS processes is structured into data elements that are defined.

CDS/ISIS data base may be thought of as a file of related data collected to satisfy the information requirements of a given user community. It may be a simple file of addresses or a more complex file such as a library catalogue or a directory of research projects. In all these files, each unit of information is made up of elementary data elements (such as personal name, a title, etc.) which may be defined and manipulated in various ways:

- Define databases
- Enter new records
- Modify, correct and delete records
- Automatically build and maintain fast access files to each database
- Retrieve records
- Sort the records
- Display the records
- Print catalogues and/or indexes

CDS/ISIS consists of a set of programs performing the above various systems functions. Data elements are stored in "fields",each of which is assigned a numeric "tag" which may be thought as the name of the field. The collection of fiel. containing all data elements of a given unit of information

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is called a "record". The unique characteristic of CDS/ISIS is that it is specifically designed to handle fields/records of varying length. A field may be optional (i.e. it may be absent in one or more records), it may contain a single data element, or two or more variable length data elements. In the latter case, the field is said to contain "subfields", each of which is identified by "subfield delimiter" preceding the corresponding data element. Furthermore a field may be "repeatable", i.e. any given record may contain more than one instance or "occurrence", of the field.

Unified Format for Information/Resource Sharing

With the foregoing discussion, resource sharing within the geographical area or within the complex is possible if there is a unified format among these libraries. Cooperation in the development of collection and services among libraries hope to provide users with all the information they need. Library cooperation and resource sharing mitigates the inability of libraries to meet user need due to limited resources. It works by coordinating and standardizing library records on demand.

Standards today take a variety of forms. They may be guidelines or models against which services, etc. are to be compared. Library standards fall into this category. Other standards take the form of rules for activities that should be applied as consistently as possible but which, by their nature, will not necessarily produce the identical results even when followed. Cataloging rules are of this type. A third class of standards are specifications or "technical"

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standards for which strict observance is necessary if sharing is to take place. Format structure, character sets and code list standards fall into this class which the paper also aimed to attain.

A format is the container which carries both data and data identifiers in a machine system. Data must be identified explicitly if it is to be processed and manipulated. The commonality of format allows some sharing of computer software; as computers get cheaper and programmers get more expensive, this sharing seems likely to spread.

Sharing of resources of any library must also include the expertise of the professional and non-professional staff. It is this amalgamation of people, processes, ideas, materials and money which form the substance of a library and can be described as its resources.

Since no library, even the largest, can hope to acquire and house every book that its patron might sometimes need, it is apparent that every library must depend to some extent upon some outside sources to provide what is lacking in its own collection to meet the needs of its patrons.

In any efforts at resource sharing there should be a clear statement of priority between the individual library and group. Each participant must think in terms of the group, otherwise the resource sharing system will not work.

On the other hand, resource sharing can bring great satisfaction and a sense of service to users, but it can

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also bring a sense of frustration and skepticism. Many are afraid to give what they possess. In most cases, it is the human factor that can spell success or failure in any library cooperative ventures whether at national or international level. There are other constraints under which resource sharing must operate such as limited financial resources, dearth of competent staff and delay in the delivery system because of distance factors.

In the case of UPLB libraries, librarians interviewed are amenable to having a unified format, with the University Library as the coordinator of these activities to minimize duplication of efforts and to maximize resources for compatibility purposes, easy access and better flow of information. Hopefully, libraries/information centers of affiliate institutions will soon join in this undertaking.

Proposed Unified Format

Table 1 shows the list of data elements in 3 existing databases, namely: Acquisition, Cataloging, and IASt.

Forty-three data elements are present in these databases. Eight data elements are common to the three databases; eight data elements are common to only 2 databases and 27 data elements do not have any similarity with the other databases. These 16 common data elements however, do not have common tags. Four of these common data elements are repeatable in one database but not in other 2 databases. Also, 4 data elements are subfielded in one but not in others. Incompatibilities in these elements need to be worked out as to which is to be followed for

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compatibility and standardization purposes. Since CDS/ISIS allows modification for data elements, unified format is attainable.

To facilitate the communication of bibliographic information among computer-based systems, large and small all over the world, is the aim of the Common Communication Format(CCF) which was established at the International Symposium on Bibliographic Exchange Formats in April 1978 and was sponsored by UNESCO/PGI.

Since one of the databases used tags for data elements common to CCF, it is but appropriate to adopt these for unification purposes. Those data elements of the existing databases which are common to CCF may be assigned the same tags or tag numbers as the CCF. Data elements which are repeatable in one data base should also be made repeatable in other databases. Likewise, data elements which are subfielded in another should also be subfielded in the other databases. Those data elements that are not with the CCF and those which may later be added should be assigned tags and field characteristics which are consistent with other upcoming databases of other libraries. As long as libraries have common or unified format in inputting data to the system, like determining access points, using standardized headings/subjects, etc., exchange of information can easily be facilitated, regardless of varying output formats libraries may need. Even if libraries will have their own indexes/catalogs, union catalogs/indexes can also be easily produced if these needed data elements are present in their databases. For LC using libraries, the International Standard Bibliographic Description would be of great help in

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making a common format for information exchanges among them.

Table 2 shows the proposed tags and field characteristics of the common data elements to be used by UPLB libraries already using CDS/ISIS as well as those intending to acquire one. These are still subject to further modification, depending on the needs and consensus of the involved libraries. For the purpose of this paper, only the 16 data elements are to be modofied at the moment while the 27 uncommon data elements may be retained and will serve as the switching format (Table 3).

Once the 16 common data elements are processed, with the tags of Acquisition and Cataloging databases converted to the proposed tags similar to IASt, using one of the functions of CDS/ISIS, the unified 43 data elements (Table 4) will serve as basis for other libraries to follow in creating their own databases.

Conclusions/Recommendations

The Los Banos complex is not only limited to UPLB but includes affiliate institutions as well. This proposed unified format could be presented to the information centers/libraries of these institutions to determine their interest, whether they truly accept the idea of resource sharing. Since these libraries are within a limited geographical area whose users have similar level of interest and whose resources are complementary and supplementary, it is with high hopes that these libraries

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outside of UPLB will be willing to cooperate and share because effective resource sharing only becomes a reality if there is commitment, funding and great deal of goodwill among participants.

Unified format among these libraries is necessary to ensure that common procedure, compatible guidelines, and standards are implemented by the individual agencies/institutions to make the most effective use of the exchange of bibliographic data.

Prohibitive organizational policies and library's rules and regulations should perhaps be reviewed for the benefit of the resource sharing group. Among affiliate institutions, PCARRD, SEARCA and IRRI (although not in the library but currently being used at their Computer Center for testing) have CDS/ISIS software package, thus, unified format among UPLB libraries could then be extended to Los Banos complex, then perhaps to National and International levels as well. It is an ambitious undertaking, but once it becomes operational at the Los Banos Complex, realization of higher undertaking may not be too far behind.

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Table 1 - LIST OF DATA ELEMENTS IN EXISTING DATABASES(DB)

Data Elements	Tags/Field Characteristics Acquisition DB	Cataloging DB	IASt DB
Author	5(R)	5	300
Title	10	50	200
Publisher	15	65	400(Sa)
Publisher Address	20	60	400(Sb)
Price	25		465
Edition	30	55	260
Pub. Date	35	70	440
Copies	40		
Letter Order No.	45		
Date Ordered	50		
Date Received	55		
Fund	60		
Subject	65(R)	110	620
Recommended By	70(R)		
Library	75(R)		
Dealer	80		
Status	82(R)		
ISBN	85	90	
Accession Number	90	105(R)	615
Co-author		10(R)	301
Corporate Entry		15	310(Sa)
Acronym			310(Sb)
Editor		20(R)	
Introduction By		25(R)	
Foreword By		30(R)	
Sponsored By		35	
Translator		40(R)	
Illustrator		45(R)	
Collation		75	460

Table 1 (Continuation) ...

Notes	80	500
Contents	85	
Tracing	95	
Call Number	100	610
Source	115	025
Date Cataloged	120	
Type of Material		005
Type of Document		010
Mode of Acquisition		015
Conference		320
Degree		030
Volume		450
Series		480
Abstract		600

(R) - Repeatable (Sa) - Subfield a (Sb) - Subfield b

Table 2 - PROPOSED UNIFIED TAGS AND FIELD CHARACTERISTICS OF COMMON DATA ELEMENTS

Tag	Data Elements/Field Characteristics
200	Title
260	Edition
300	Author (R)
400	Place of Publication and Publisher
400a	Publisher (Sa)
400b	Publisher's Address (Sb)
440	Publication Date
615	Accession Number (R)
620	Subject (R)
90	ISBN
115	Source
301	Co-author (R)
310	Name of Corporate Body
310a	Corporate Entry (Sa)
460	Collation
465	Price
500	Notes
610	Call Number

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Table 3 - TAGS/DATA ELEMENTS NOT COMMON TO EXISTING DATABASES

Tag	Data Elements
20	Editor
25	Introduction By
30	Foreword By
35	Sponsored By
37*	Translator
39*	Illustrator
40	Copies
45	Letter Order No.
50	Date Ordered
55	Date Received
60	Fund
70	Recommended By
75	Library
80	Dealer
82	Status
85	Contents
95	Tracing
005	Type of Material
010	Type of Document
015	Mode of Acquisition
030	Degree
120	Date Cataloged
310b	Acronym
320	Conference
450	Volume
480	Series
600	Abstract

Renumbered

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Table 4 - PROPOSED UNIFIED FORMAT FOR ALL THE EXISTING DATA ELEMENTS

Tag	Data Elements/Field Characteristics
200	Title
260	Edition
300	Author (R)
400.	Place of Publication and Publisher
400a	Publisher (Sa)
400b	Publisher's Address (Sb)
440	Publication Date
615	Accession Number (R)
620	Subject (R)
90	ISBN
115	Source
301	Co-author (R)
310	Name of Corporate Body
310a	Corporate Entry (Sa)
310b	Acronym (Sb)
460	Collation
465	Price
500	Notes
610	Call Number
20	Editor (R)
25	Introduction By (R)
30	Foreword By (R)
35	Sponsored By
37	Translator (R)
39	Illustrator (R)
40	Copies
45	Letter Order No.
50	Date Ordered
55	Date Received
60	Fund

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Table 4 (Continuation) ...

70	Recommended By
75	Library
80	Dealer
82	Status
85	Contents
95	Tracing
005	Type of Material
010	Type of Document
015	Mode of Acquisition
030	Degree
120	Date Cataloged
320	Conference
450	Volume
480	Series
600	Abstract

Appendix 1 - UPLB UNITS

1. College of Agriculture
    a. Dairy Training and Research Institute
    b. Farming Systems and Soil Resources Institute
    c. Institute of Animal Science
    d. Institute of Food Science and Technology
    e. Institute of Plant Breeding
    f. National Crop Protection Center
    g. National Plant Genetic Resources Laboratory
    h. UPLB-ASEAN Postharvest Horticulture Training and Research Center
2. College of Arts and Sciences
    a. Institute of Biological Sciences
    b. Institute of Chemistry
    c. Institute of Mathematical Sciences and Physics
    d. Learning Resource Center
    e. UPLB Limnological Station
3. College of Economics and Management
    a. Institute of Agrarian Studies
    b. Agricultural Credit and Cooperative Institute
4. College of Engineering and Agro-Industrial Technology
    a. Agricultural Machinery Testing and Evaluation Center
    b. Regional Network for Agricultural Machinery
5. College of Forestry
    a. Institute of Forest Conservation
    b. Forest Development Center
    c. Forestry Research and Extension Center
6. College of Human Ecology
7. College of Veterinary Medicine
8. Specialized and Training Units
    a. Center of Policy and Development Studies
    b. Museum of Natural History
    c. National Institutes of Biotechnology and Applied Microbiology
    d. National Training Center for Rural Development
    e. Research Management Center

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